SECTION 33 31 30

PIPE BURSTING

PART 1 – GENERAL

It is the intent of this portion of the Specification to provide for replacement of sewer mains via the trenchless technology of pipe-bursting. Pipe-bursting for sewer main rehabilitation/replacement shall be reviewed and approved by the City on a case-by-case basis. Pipe-bursting may be used for lateral rehabilitation/replacement and shall conform to the latest editions of the UPC (IAPMO IS 26-2003) and the following requirements.

1.01 WORK INCLUDED

A. Scope of Work
Shall be per the design submittal and the Contract Documents.

B. Work may include installation of equipment and incidentals required for sanitary sewer system improvements, including sewer mains, laterals, manholes, flushing inlets, grease traps and interceptors, and pumping facilities in accordance with the requirements of the Contract Documents.

C. Any and all work to be performed on the Collection System shall be inspected and approved by City Staff.

D. The Contractor shall be certified by the particular pipe-bursting system manufacturer and personnel shall be certified as fusion technicians by a manufacturer of HDPE pipe. Certifications shall be submitted with the lateral application.

E. The Contractor shall perform a pre-construction Closed Circuit Television (CCTV) inspection to evaluate the condition of the existing pipe and determine whether the pipe-bursting method is a valid alternative for repair. Inspection video shall be made available to the City.

F. The Contractor shall comply with the City's NPDES Discharge permit, as updated, for discharges to the storm drain system, including adherence to all applicable Best Management Practices to prevent pollutants, including sediment, from entering the storm drains. Contractor shall also comply with the current General Permit for Construction Activity from the California Regional Water Quality Control Board and current San Mateo Countywide Water Pollution Prevention Program permit.

1.02 RELATED REQUIREMENTS

City Standard Specifications **Section 33 30 00 "Sanitary Sewerage Utilities".**

1.03 REFERENCE STANDARDS

A. ASTM D 3035 "Standard Specification for Polyethylene Plastic Pipe (SDR-PR). Based on controlled outside diameter."

B. ASTM D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fitting".

C. ASTM F 714 "Standard Specification for Polyethylene Plastic Pipe (SDR-PR). Based on Outside Diameter"

D. ASTM D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fitting".

1.04 QUALITY ASSURANCE

A. All materials and equipment furnished under this Section shall be:

1. From a manufacturer who has been regularly engaged in the design and manufacture of the materials and equipment for at least five (5) years; and

2. Approved by the Engineer before installation. The Engineer shall verify that the quality is equal to the materials and equipment made by those manufacturers specifically named herein, if an alternate product manufacturer is proposed.

1.05 SUBMITTALS

A. Shop Drawings: Submit data to show that the product conforms to the specification requirements.

B. Materials List: Submit a list of all materials proposed to be used on the project, showing manufacturer's name, product trade name, type, grade, and weight. Materials list shall be submitted and approved before any installation occurs.

C. Manufacturer's Warranty: Submit manufacturer's warranty on the product and a certificate showing compliance with applicable ASTM Standards.

PART 2- PRODUCTS

2.01 MATERIALS

A. Only HDPE SDR 17 and butt-fusion joints shall be used for pipe bursting applications.

2.02 CONSTRUCTION

At a minimum, the Contractor shall adhere to the following requirements during construction:

A. Defects and Obstructions

Contractor shall perform all necessary point repairs and remove all obstructions when pre-construction CCTV inspection reveal heavy solids, offset joints, sags in the pipe, or collapsed pipe that will prevent the completion of the pipe bursting process.

If preconstruction CCTV inspection reveals a sag in the lateral that is greater than one-quarter of an inch (1/4”), Contractor shall excavate and replace those sections of pipe to result in acceptable grade without the sag.

B. Utility Location and Required Clearances

New pipe shall maintain a thirty inch (30”) minimum clearance for parallel utilities, sixty inch (60”) for parallel high risk utilities, and a twelve inch (12’) minimum vertical clearance for perpendicular (or crossing) utilities.

Due to the hazards associated with pipe-bursting near natural gas lines, all natural gas lines, including but not limited to distribution mains, transmission mains, and service lines, marked within four feet (4’) of the existing sewer main, shall be uncovered (pot-holed) to confirm the required clearance exists. If the existing gas line is installed parallel and within four feet (4’) horizontally to the existing sewer main, the gas line shall be uncovered a minimum of once every one-hundred (100) feet along the length of the sewer main.

C. Pipe Relaxation

After the pipe has been installed, allow pipe manufacturer’s recommended amount of time, but not less than four (4) hours, for cooling and relaxation due to tensile stressing prior to reconnecting to the lateral or sewer.

D. Reconnections to Existing Laterals

Connections to existing laterals shall be made with a watertight non-shear coupling.

E. Bedding and Backfill Requirements

Bedding and backfill for all point repairs or connections to the existing lateral shall be in accordance with City Standard Specifications **Section 31 23 33 "Trench Excavation and Backfill"**

F. Post-Construction CCTV Inspection
Contractor shall perform a post-construction Closed Circuit TV (CCTV) inspection to verify the new pipe was functional and acceptable. Contractor shall repair any sections of pipe that do not meet the requirements of this Section. The inspection video shall be provided to the City.

2.03 DESIGN REQUIREMENTS

A. Conveyance Capacity

1. New pipe installation by pipe-bursting shall provide the maximum conveyance capacity possible and in no case shall provide less capacity than currently exists.

B. Design Criteria

In addition to the requirements for submittals set forth in the construction contracts and the requirements for submittals contained in companion sections of these specifications, Contractor shall submit the following:

1. Manufacturer's literature for new HDPE pipe, fittings and materials.
2. Test results and certification of compliance for materials.
3. Proposed plan for bypassing sewage during installation, if applicable.
4. Proposed method of reconnecting service laterals..
5. Details identifying proposed installation method, equipment, and location of access and receiving pits.

PART 3- EXECUTION

3.01 INSTALLATION

A. Cleaning and Inspection

Prior to the pipe-bursting operation, Contractor shall thoroughly clean the sewer main designated for pipe bursting to be followed by Closed Circuit Television Inspection (CCTV) to identify the location of all laterals and other connections. Contractor shall inspect the sewer main in accordance with City Standard Specifications **Section 33 30 00 "Sanitary Sewerage Utilities".**

B. Sewage Flow Control

1. Contractor shall provide for maintenance of flow in the affected portions of the sewer system during pipe-bursting.

2. Unless otherwise specifically required, Contractor shall locate excavation(s) for insertion of new pipe to cause the least disruption to existing utilities, traffic and area business. If Contractor locates insertion pit at an existing precast concrete manhole location, Contractor shall remove manhole frame, cover, cone, riser and manhole sections as necessary and store for reinstallation upon completion.

3. Sections of new HDPE pipe shall be field connected above the insertion pit using butt-fused joints.

C. Service Connections

1. Contractor shall reconnect all service connections to the sewer unless the Engineer deems connection to be inactive or abandoned. Contractor shall comply with the following connection procedures:

i. Contractor shall excavate and install a heat-fused saddle configured to the outside diameter of the new pipe of tee length necessary to connect existing service or lateral.

ii. To join pipes of dissimilar material, Contractor shall joint plain ends and connect the existing pipes and services using flexible pipe connectors equipped with stainless steel bands and fastening devices as specified.

D. Manholes

1. Where existing manhole locations have been used as access or receiving pit sites, Contractor shall reconstruct manholes using salvaged materials. If existing manhole materials are not suitable for salvage, Contractor shall reconstruct manhole in accordance with City Standard Specifications and Detail Drawings.

3.02 TESTING AND ACCEPTANCE

A. After all work is completed, Contractor shall conduct a post construction CCTV Inspection of the new pipe and provide the City with a DVD showing both the pre- and post-installation conditions, including the restored connections. All defects discovered during the post-installation television inspection shall be corrected by the Contractor at its expense before the work under the Contract will be considered for Substantial Completion. After the defects, if any, are corrected, the affected sewer segment(s) shall be video inspected again. The post-installation television inspection shall be submitted in sufficient time to allow the City to review the video prior to the Substantial Completion milestone.

PART 4- MEASUREMENT AND PAYMENT

A. Payment shall include all bypass pumping, cleaning, pre- and post-construction televising, labor, equipment, material, supervision, sheeting, shoring, bracing, installation, manhole reconstruction at access and pit locations, safety, dust/erosion control, testing, site restoration and all other work specified or not which is reasonably required to provide a completed installation. Any item not specified shall be considered incidental to the work. Contractor shall include all incidental cost in the unit price for the slip liner.

B. Contractor shall receive payment for building sewer lateral reinstatement on a unit price basis per lateral connection diameter reinstated in accordance with the unit prices contained in the Contract Documents.

C. Contractor shall receive payment for Mobilization/Demobilization and Traffic Control on a lump sum basis in accordance with the prices contained in the Contract Documents.

- END OF SECTION -